

REMARKS

Claims 25 and 28-45 are pending. Reconsideration and allowance of the application are respectfully requested in view of the following remarks.

Legal Standards for Claim Construction

Before addressing the grounds of rejection stated in the final Official Action, legal standards for claim construction will be discussed. As explained at MPEP § 2111, page 2100-46, “[d]uring patent examination, “the pending claims must be given their broadest reasonable interpretation consistent with the specification”, citing In re Hyatt, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000). As explained at page 2100-47 of the MPEP, “[t]he broadest reasonable interpretation of the claims must also be consistent with the interpretation that those skilled in the art would reach,” citing In re Cortright, 49 USPQ2d 1464, 1468 (Fed. Cir. 1999). As stated in Phillips v. AWH Corp., No. 03-1269, -1286, slip op. at 9 (Fed. Cir. July 12, 2005) (en banc):

We have frequently stated that the words of a claim ‘are generally given their ordinary and customary meaning.’ ... We have made clear, moreover, that the ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application. (Citations omitted).

As stated in MPEP § 2101.01, page 2100-48, “[when] not defined by applicant in the specification, the words of a claim must be given their plain meaning. In other words, they must be read as they would be interpreted by those of ordinary skill in the art” (emphasis added). As stated in Toro Co. v. White Consol. Indust. Inc., 53 USPQ2d 1065, 1067 (Fed. Cir. 1999), “[w]ords in patent claims are given their

ordinary meaning in the usage of the field of the invention, unless the text of the patent makes clear that a word is used with a special meaning."

Legal Standards for Obviousness

Applicable standards for combined reference obviousness under 35 U.S.C. § 103 will be discussed. According to MPEP § 2143.01, page 2100-131:

If [the] proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). (Emphasis added).

According to other legal authority, a combination of references that would destroy the device of the base reference for its intended purpose would not have rendered obvious the claimed subject matter. See Ex Parte Westphalen, 159 USPQ 507, 508 (Bd. App. 1967), and Ex Parte Hartmann, 186 USPQ 366, 367 (Bd. App. 1974). A combination of references that would produce a seemingly inoperative device teaches away from the asserted combination. In re Sponnoble, 160 USPQ 237, 244 (CCPA 1969).

Even if individual features of the claimed subject matter may be selectively found in the art, this does not establish *prima facie* obviousness. Rather, the art itself, and not Applicants' disclosure, must also suggest the desirability of the modification of a base reference advanced by the U.S. Patent and Trademark Office ("PTO"). Even if a base reference may be modified in the manner suggested by the PTO, this does not make the modification obvious. See In re Fritch, 23 USPQ2d 1780, 1783-84, n. 14 (Fed. Cir. 1992).

As stated in In re Kotzab, 55 USPQ2d 1313, 1316-17 (Fed. Cir. 2000):

[M]ost if not all inventions arise from a combination of old elements. Thus, every element of a claimed invention may often be found in the prior art. However, identification in the prior art of each individual part claimed is insufficient to defeat patentability of the whole claimed invention. Rather, to establish obviousness based on a combination of the elements disclosed in the prior art, there must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by applicant. (Citations omitted; emphasis added).

As stated in Ruiz v. A.B. Chance Co., 69 USPQ2d 1686, 1690 (Fed. Cir. 2004):

In making the assessment of differences, section 103 specifically requires consideration of the claimed subject invention 'as a whole.' Inventions typically are new combinations of existing principles or features. ... The 'as a whole' instruction in title 35 prevents evaluation of the invention part by part. Without this important requirement, an obviousness assessment might break an invention into its component parts (A + B + C), then find a prior art reference containing A, another containing B, and another containing C, and on that basis alone declare the invention obvious. This form of hindsight reasoning, using the invention as a roadmap to find its prior art components, would discount the value of combining various existing features or principles in a new way to achieve a new result – often the very definition of invention. (Citation omitted, emphasis added).

First Rejection Under 35 U.S.C. §103

Claims 25, 29, 33, 34, 37, 38, 42 and 45 stand rejected under 35 U.S.C. § 103(a) over U.S. Patent No. 5,685,942 to Ishii ("Ishii") in view of U.S. Patent No. 5,772,771 to Li et al. ("Li") and U.S. Patent No. 6,132,512 to Horie et al. ("Horie").¹

The reasons for the rejection are stated on pages 2-5 of the final Official Action. The rejection is respectfully traversed.

Claim 25 recites a gas injector for supplying process gas to a plasma processing chamber, which comprises, *inter alia*, "gas injector body of dielectric

¹ Claim 42 depends from Claim 28, which is not included in this ground of rejection. Applicants assume that Claim 42 was inadvertently included in this ground of rejection.

material and sized to extend through a chamber wall of the processing chamber such that an axial distal end surface of the gas injector body is exposed within the processing chamber, the gas injector body including a plurality of gas outlets adapted to supply process gas into the processing chamber" (emphasis added).

Applicants respectfully submit that the final Official Action has not properly construed the term "dielectric material" recited in Claims 25 and 42 in accordance with the legal principles discussed above. The PTO is required to give the term "dielectric material" its plain meaning as would be interpreted by one having ordinary skill in the field of the claimed subject matter unless the application makes clear that this term has been given a special meaning. However, the term "dielectric material" has not been given a special meaning in the application. As discussed at page 10, lines 7-8, of the specification, exemplary dielectric materials that can be used for the gas injector include quartz, alumina and silicon nitride. Each of these dielectric materials is an electrical insulator.

As was discussed in the Amendment filed on April 4, 2005, dielectric materials are one of the well-known, discrete classes of solid-state materials. Applicants submitted a dictionary definition of "dielectric" with the April 4, 2005, Amendment. The dictionary showed that dielectric materials are defined as non-conductors of electricity, i.e., electrical insulators. Dielectric materials can be used to make parts that act as electrical insulators. Other well-known, discrete classes of solid-state materials are semiconductors and conductors, which each have electrical conductivity properties different from those of dielectric materials.

The claimed gas injector body is of a dielectric material. One having ordinary skill in the art would understand that the claimed "dielectric material" has different

electrical conductivity properties than a semiconductor material or a conductor material.

The final Official Action acknowledges that Ishii does not disclose a gas injector body of dielectric material, but that Ishii discloses a conductor gas injector. However, the final Official Action contends that "Ishii teaches alternative materials to conductive, non-dielectric, electrodes which are dielectric semiconductors such as the same materials as that of the processed semiconductor ('quartz') wafer (column 4; lines 43-51)." Applicants respectfully submit that Ishii does not support these contentions, which are technically incorrect.

Ishii's ground electrode 85 shown in FIG. 4 is a showerhead electrode and, as such, is necessarily made of an electrically conductive material. Because dielectric materials are, by definition, electrical insulators, the ground electrode 85 would be inoperable for its intended purpose of conducting electricity and functioning as a ground electrode if it were made of a dielectric material, i.e., an electrical insulator. As such, Ishii provides no suggestion or motivation to make the proposed modification according to MPEP § 2143.01 and the legal authority discussed above.

In fact, Ishii discloses the use of conductors, semiconductors and insulators and thus explicitly recognizes that these are three different classes of materials that are not interchangeable. Particularly, at column 4, lines 43-51, Ishii discloses specific materials for the ground electrode 31. Ishii discloses that the electrode is made of a conductor or a semiconductor. Ishii discloses that the ground electrode can be made of the same material as that of the processing housing 2, i.e., aluminum, which has high electrical conductivity. Ishii also discloses that "Si single

crystal, SiC or C, which are the same material as that of the semiconductor wafer, can also be used as a material to prevent heavy metal contamination."

Ishii teaches away from using a dielectric material for a ground electrode in Ishii's apparatus. It is well-known in the art that quartz is an insulator material. In fact, Ishii provides explicit evidence of this. At column 9, lines 44-46, Ishii discloses that:

A cylindrical support member 132 consisting of an insulating member such as ceramics or quartz, is disposed at the center of the bottom surface of the chamber 115. (Emphasis added).

Accordingly, Ishii refutes the contention in the final Official Action that quartz is a semiconductor material. Additionally, the final Official Action identifies no disclosure in Ishii regarding the use of quartz as a material of the ground electrode.

At page 4, second paragraph, of the final Official Action, it is stated that it would have been obvious to "use alternative conductor materials for Ishii's conductor gas injector" (emphasis added). Applicants agree that Ishii discloses the ground electrode can be made of conductor (or semiconductor materials). However, making Ishii's ground electrode from an alternative conductor material still would not result in the claimed injector body of dielectric material, i.e., a non-conductor material.

At page 10, numbered point (9), of the final Official Action, it is stated that:

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "Particularly, dielectric materials are electrical insulators, and semiconductor materials have electrical properties intermediate to those of insulators and conductors.") are not recited in the rejected claims. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims To this end Applicant appears to indirectly argue ranges of a dielectric property, however, none of the pending claims require a claimed range of a dielectric property.

In response to this statement, Applicants are not claiming any specific range of electrical conductivity values in Claim 25. Also, Applicants are not urging that any numerical limitations regarding the electrical conductivity of the dielectric material be read into Claim 25 from the specification. Nor has the term "dielectric material" been given a special meaning in the specification. As discussed above, it is well-known in the art that dielectric materials are electrical insulators, and that semiconductor and conductor materials are other discrete classes of solid-state materials having different electrical conductivity properties than those of dielectric materials, i.e., electrical insulators. Accordingly, one having ordinary skill in the art would understand that the dielectric material recited in Claim 25 excludes a semiconductor material or conductor material. As such, Applicants submit that it would be redundant to amend Claim 25 to recite that the dielectric material has different electrical conductivity properties than semiconductor or conductor materials, because one having ordinary skill in the art would understand that the recited "dielectric material" by definition has such different electrical conductivity properties; i.e., that such properties are already implicit in the language recited in Claim 25.

Accordingly, Ishii fails to disclose a gas injector including each and every feature recited in Claim 1, including a "gas injector body of dielectric material." Moreover, Ishii provides no suggestion or motivation to modify the ground electrode to include a body of dielectric material, as recited in Claim 25.

Applicants submit that Li and Horie do not provide the necessary suggestion or motivation to modify Ishii's ground electrode 85 to result in the gas injector recited in Claim 25. Li discloses a deposition chamber 2 including a nozzle 56. Li provides no motivation to make Ishii's ground electrode 85 from a dielectric material because

such modification would destroy the intended function and purpose of Ishii's electrode.

Horie also does not suggest modifying Ishii's ground electrode 85 to result in the gas injector recited in Claim 25. The final Official Action references Figures 18A, 18B of Horie and asserts that Horie discloses a "gas distribution plate" 64. However, Horie also provides no motivation to make Ishii's ground electrode 85 from a dielectric material because such modification would destroy the electrode's intended function and purpose.

Accordingly, the applied references, in combination, do not provide the required suggestion or motivation to modify Ishii's ground electrode to result in the gas injector recited in Claim 25, which includes the features of an injector body of dielectric material. Thus, the applied references do not support the alleged *prima facie* obviousness. Therefore, the gas injector recited in Claim 25 is patentable over the applied references.

Claims 29, 33, 34, 37 and 38 depend from Claim 25 and, accordingly, are also patentable over Ishii.

Independent Claim 42 recites a gas injector for supplying process gas to a plasma processing chamber, which comprises, *inter alia*, "gas injector body made of a dielectric material selected from the group consisting of quartz, alumina and silicon nitride and sized to extend through a chamber wall of the processing chamber such that an axial distal end surface of the gas injector body is exposed within the processing chamber, the gas injector body including a plurality of gas outlets adapted to supply process gas into the processing chamber" (emphasis added). For

reasons discussed above, the applied references also do not suggest the gas injector recited in Claim 42.

Therefore, withdrawal of the rejection is respectfully requested.

Second Rejection Under 35 U.S.C. §103

Claims 28, 30-32, 35, 36, 39, 40, 43 and 44 stand rejected under 35 U.S.C. § 103(a) over Ishii and Li in view of U.S. Patent No. 6,077,357 to Rossman et al. (“Rossman”) and Horie. The reasons for the rejection are stated on pages 5-7 of the final Official Action. The rejection is respectfully traversed.

Claims 28, 30-32, 35, 36, 43 and 44 depend from Claim 25. As discussed above, the combination of Ishii, Li and Horie fails to suggest the gas injector recited in Claim 25. Rossman has been cited for disclosure of O-ring seals. Applicants submit, however, that Rossman provides no motivation to make Ishii’s electrode of a dielectric material, instead of a conductive material, and thereby destroy its intended function. Accordingly, the combination of Ishii, Li, Horie and Rossman fails to suggest the gas injector recited in Claims 28, 30-32, 35, 36, 43 and 44.

Moreover, dependent claims 28, 30-32, 35, 36, 43 and 44 recite additional combinations of features that provide additional bases to patentably distinguish the claimed gas injector over the applied combination of references. Ishii’s ground electrode 85 is a shower head type of gas injector including supply ports 87 oriented parallel to each other. In contrast, Li’s nozzle 56 is not a showerhead type gas injector. In fact, Li discloses that “the center nozzle 56 could be replaced by a shower head type of gas distributor having multiple exits” (emphasis added). See column 5, lines 31-33, of Li. Li discloses that the center nozzle 56 is a different type

of gas distributor than a shower head type, and that these different types of gas distributors can be used, as they are constructed, in place of each other. Li not only does not suggest, but would have led away from, modifying a showerhead type gas distributor to incorporate any of the features of the nozzle 56. Accordingly, to the extent that the final Official Action asserts that Li's nozzle 56 includes the features of "the gas outlets include a center gas outlet extending in the axial direction and a plurality of angled gas outlets extending at an acute angle to the axial direction," as recited in Claim 28, Li teaches away from modifying Ishii's showerhead type ground electrode 85 to include such features.

It should also be noted that Li's nozzle 56 includes center nozzles 56a that each extend at an angle relative to the axial direction of the nozzle. As such, modifying Ishii's ground electrode 85 to include gas outlets that are each oriented at an angle relative to the axial direction of the ground electrode would still not result in the gas injector recited in Claim 28, which includes the features of "the gas outlets include a center gas outlet extending in the axial direction and a plurality of angled gas outlets extending at an acute angle to the axial direction" (emphasis added).

Independent Claim 39 recites a gas injector for supplying process gas to a plasma processing chamber, which comprises, *inter alia*, "gas injector body ... including a plurality of gas outlets adapted to supply process gas into the processing chamber and a cylindrical bore adapted to supply gas to the gas outlets, the cylindrical bore being defined by a sidewall and an endwall which extends radially inwardly from the sidewall, the gas outlets including a center gas outlet extending from the endwall in the axial direction and a plurality of angled gas outlets extending from the endwall at an acute angle to the axial direction, wherein the gas outlets are

located in the axial distal end surface of the gas injector body" (emphasis added).

The gas injector recited in Claim 39 is also patentable over the applied combination of references for at least the following reasons.

As discussed above, the applied references fail to suggest modifying Ishii's ground electrode 85 to include the features of a gas injector body including a plurality of gas outlets including "a center gas outlet extending from the endwall in the axial direction and a plurality of angled gas outlets extending from the endwall at an acute angle to the axial direction" (emphasis added). Li teaches away from modifying Ishii's shower head type ground electrode 85 to include features of the nozzle 56, which is not a shower head type gas distributor.

Additionally, each of the supply ports 87 of Ishii's ground electrode 85 extends along the axial direction, while, in contrast, each of the nozzles 56a of Li's nozzle does not extend along the axial direction of the nozzle 56. As such, Li provides no suggestion to modify Ishii's ground electrode to include the combination of the center gas outlet extending from the endwall in the axial direction:and the "plurality of angled gas outlets extending from the endwall at an acute angle to the axial direction." Thus, the applied references do not provide the required motivation to modify Ishii's ground electrode having a showerhead type structure in the manner advanced in the final Official Action. However, as stated in In re Lee, 61 USPQ2d, 1430, 1434 (Fed. Cir. 2002):

It is improper, in determining whether a person of ordinary skill would have been led to use this combination of references, simply to '[use] that which the inventor taught against its teacher.
(Citation omitted).

Thus, for at least the foregoing reasons, the gas injector recited in Claim 39 is also patentable. Dependent Claim 40 is also patentable for at least the same reasons as those for which Claim 39 is patentable.

Therefore, withdrawal of the rejection is respectfully requested.

Third Rejection Under 35 U.S.C. §103

Claim 41 stands rejected under 35 U.S.C. § 103(a) over Ishii and Li in view of U.S. Patent No. 5,734,143 to Kawase et al. ("Kawase") and Horie. The reasons for the rejection are stated on pages 5-7 of the final Official Action. The rejection is respectfully traversed.

Claim 41 recites a gas injector for supplying process gas to a plasma processing chamber, which comprises, *inter alia*, "a gas injector body sized to extend through a chamber wall of the processing chamber such that an axial distal end surface of the gas injector body is exposed within the processing chamber, the gas injector body including a plurality of gas outlets adapted to supply process gas into the processing chamber, wherein the gas outlets are located in the axial distal end surface of the gas injector body ..., wherein the gas injector body includes a uniform diameter central bore adapted to supply gas to the gas outlets, the central bore extending axially from an upper axial end face of the gas injector body, the central bore being defined by a cylindrical sidewall and a flat endwall extending between the cylindrical sidewall, inlets of the gas outlets being located on the flat endwall" (emphasis added).

In the exemplary embodiment of the claimed gas injector 22 shown in FIG. 3A (see Exhibit A attached to the April 4, 2005, Amendment), the endwall is a bottom

surface partially defining the central bore 44. The sidewall also partially defines the central bore 44. In the gas injector 22, the endwall extends between the cylindrical sidewall, i.e., in the space between the sidewall. For the Examiner's information, Applicants have attached page 132 of The American Heritage College dictionary, third ed., Houghton Mifflin (2000), which provides definition 2 of "between" as "connecting spatially." This definition is consistent with the configuration of the embodiment of the gas injector 22 shown in FIG. 3A, in which the endwall "connects spatially" the sidewall. Applicants have not given the term "between" any special meaning. Accordingly, as discussed above, this term must be given its plain meaning as it would be understood by one having ordinary skill in the art.

Also, in the gas injector 22, inlets of the gas outlets 46 are located on the flat endwall that partially defines the cylindrical bore and connects spatially the sidewall. The outlets of the gas outlets are located in the axial distal end surface of the gas injector body.

The final Official Action acknowledges that Ishii does not disclose a gas injector body including a uniform diameter central bore, as recited in Claim 41. However, the final Official Action contends that Kawase discloses a gas injector ("dielectric plate" 11) shown in Fig. 2 including a uniform central bore along axis 70 defined by a cylindrical sidewall and a flat endwall ("bottom of 11"), with inlets of the gas outlets 10 located on the flat endwall. See pages 11-12, numbered point (13) of the final Official Action. The final Official Action further contends that it would have been obvious to replace Ishii's injector body (ground electrode 85) with Kawase's injector body. See page 8, second paragraph, of the final Official Action. Applicants respectfully disagree with these assertions.

The alleged flat endwall of Kawase's plate 11, i.e., the bottom of the dielectric plate 11, does not extend between the "cylindrical sidewall" defining the "central bore" of the plate 11, as the term "between" should be properly construed. In contrast, in the plate 11, the space "between" the sidewall (i.e., the space that connects spatially the sidewall an in which the central gas inlet port 13 is located) is empty, and the bottom surface of the dielectric plate extends radially outwardly from the bore extending along axis 70, and out to the side surface of the dielectric plate 11.

Furthermore, Claim 41 recites the features of "the gas injector body includes a uniform diameter central bore adapted to supply gas to the gas outlets" (emphasis added). As shown in FIG. 3A of the present application, the central bore 44 is in fluid communication with the gas outlets 46. However, in the Kawase plate 11, the bore extending along axis 70 cannot supply gas to the alleged outlets (gas injection holes 10) as the bore and gas injection holes are not in fluid communication with each other. Thus, Kawase also does not suggest the features of "the gas injector body includes a uniform diameter central bore adapted to supply gas to the gas outlets" (emphasis added), as recited in Claim 41.

Applicants also note that the inlets of the gas injection holes 10 are located on the top surface of the plate 11, not on the bottom surface of the plate 11, as asserted in the final Official Action. The outlets of the gas injection holes 10 are located on the bottom surface of the plate 11 so that the gas is injected along the injection axis 60 toward the axis 70. See column 6, lines 10-12, of Kawase. The outlets of the gas injection holes 10 are not located on the top surface of the plate 11. To the extent that the final Official Action has contended that the inlets and the outlets of the gas

injection holes 10 are located at the same bottom surface of the plate 11, such contention is not supported by Kawase.

Accordingly, because Kawase's dielectric plate 11 also lacks features recited in Claim 41, even if Ishii's ground electrode 85 of a conductive material were replaced by Kawase's dielectric plate 11 as proposed in the final Official Action (although this modification would improperly destroy the operability of Ishii's ground electrode 85), this modification still would not produce a gas injector that includes every feature recited in Claim 41. However, as stated at MPEP § 2143.03, page 2100-133, “[t]o establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art” (citation omitted). Thus, the applied references do not support the alleged *prima facie* obviousness of the claimed gas injector. Therefore, the gas injector recited in Claim 41 is patentable over the references.

Therefore, withdrawal of the rejection is respectfully requested.

Conclusion

For the foregoing reasons, allowance of the application is respectfully requested. If there are any questions concerning this response, the Examiner is respectfully requested to contact the undersigned at the number given below.

Respectfully submitted,

BURNS, DOANE, SWECKER & MATHIS, L.L.P.

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By: 
Edward A. Brown
Registration No. 35,033

P.O. Box 1404
Alexandria, Virginia 22313-1404
(703) 836-6620

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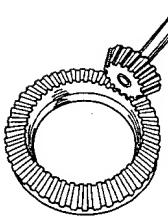
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Beth-a-ny (bēth'ə-nē). 1. A village of ancient Palestine at the foot of the Mount of Olives near Jerusalem. According to the Bible, it was the site of the resurrection of Lazarus. 2. A city of central OK W of Oklahoma City. Pop. 20,075.

Be-the (bā'thē), Hans Albrecht. b. 1906. German-born Amer. physicist who won a 1967 Nobel Prize.

beth-el (bēth'əl) n. 1. A hallowed or holy place. 2.a. A chapel for seafarers. b. Chiefly British. A Nonconformist chapel, esp. a Baptist or Methodist one. [Heb. bēt'el, house of God : bēt, house + 'el, God.]

Beth-el (bēth'əl). 1. (also bēth'əl'). A town of ancient Palestine N of Jerusalem; now a major archaeological site. 2. A town of SW CT SE of Danbury. Pop. 17,541.

Bethel Park. A borough of SW PA, a suburb of Pittsburgh. Pop. 33,823.

Be-thes-da (bā-thēz'dā). An unincorp. city of W-central Maryland, a suburb of Washington DC. Pop. 62,936.

be-think (bī-thingk') v. -thought (-thōt'), -think-ing, thinks. —tr. 1. To make (oneself) consider. 2. To remind (oneself); remember. See Syns at **remember**. —intr. Archaic. To meditate. [ME *bithinken* < OE *bethencan*. See *tong**.]

Beth-le-hem (bēth'lē-hēm', -lē-əm). 1. A town in the West Bank S of Jerusalem; traditional birthplace of Jesus. Pop. 25,000. 2. A city of E PA on the Lehigh R. NNW of Philadelphia. Pop. 71,428.

Beth-mann-Höll-weg (bēt'mān-hōl'vāg', -mān-), Theobald von. 1856–1921. German chancellor (1909–17) who opposed unrestricted submarine warfare during World War I.

Be-thune (bā-thūn'), Mary McLeod. 1875–1955. Amer. educator who sought improved racial relations and educational opportunities for Black Americans.

be-tide (bī-tid') v. -tid-ed, -tid-ing, -tides. —tr. To happen to. —intr. To take place; befall. [ME *bitiden*: bī, be- + *tiden*, to happen (< OE *tidan*; see *time**)]

be-times (bī-timz') adv. 1. In good time; early. 2. Once in a while. 3. Archaic. Quickly; soon. [ME *bitimes*: *bi*, by; see *by* + time, time; see *time* + -es, adv. suff.; see *-s*].

be-tise (bā-tēz') n., pl. -tises (-tēz'). 1. Stupidity; folly. 2. A stupid or foolish act or remark. [Fr. < *bête*, beast, fool, foolish < OFr. *beste*, beast. See *BEAST*.]

Bet-je-man (bēch'ə-mən), Sir John. 1906–84. British writer and poet laureate (1972–84) whose works include *A Few Late Chrysanthemums* (1955).

be-to-ken (bī-tō'kən) tr.v. -kened, -ken-ing, -kens. To be or give a sign or portent of. [ME *bitoken*: *bi*, be- + *toknen*, to signify (< OE *tānian*; see *deik**.)]

be-to-ny (bēt'nē) n., pl. -nies. 1. Any of several plants of the widespread genus *Stachys* in the mint family, esp. *S. officinalis* native chiefly to Europe and once used in medicine. 2. The lousewort. [ME < OFr. *beteigne* < Med.Lat. *betónia*, both < Lat. *vettónica*, prob. < *Vettónēs*, an ancient Iberian tribe.]

be-took (bī-tük') v.t. of *take*.

be-tray (bī-trā') tr.v. -trayed, -tray-ing, -trays. 1.a. To give aid or information to an enemy of; commit treason against. b. To deliver into the hands of an enemy in violation of a trust or allegiance. 2. To be false or disloyal to. 3. To divulge in a breach of confidence. 4. To make known unintentionally. 5. To reveal against one's desire or will. 6. To lead astray; deceive. See Syns at *deceive*. [ME *bitrayen*: *bi*, be- + *trayen*, to betray (< OFr. *trair* (< Lat. *trādere*, to hand over; see *TRADITION*).] — **be-tray'al** n. — **be-tray'er** n.

be-trot (bī-trōth', -trōth') tr.v. -trotted, -trot-hing, -troths. —tr. To promise to give (someone) in marriage. 2. To promise to marry (someone). [ME *bitrouthen*: *bi*, be- + *trouth*, troth (< OE *treowth*; see *deru**.)] — **be-trotted**, (-trōth', -trōth') adj. & n.

be-trot·al (bī-trō'thal, -trō'thal) n. 1. The act of betrothing or the fact of being betrothed. 2. A mutual promise to marry. **be-tte** (bēt') n. Any of various species of small, brightly colored, long-finned freshwater fishes of the genus *Betta*, found in southeast Asia. [NL. *Betta*, genus name.]

Bet-ten-dor (bēt'nē-dör') n. A city of E IA, a suburb of Davenport. Pop. 28,132.

be-ter¹ (bēt'ər) adj. Comp. of **good**. 1. Greater in excellence or higher in quality than another or others. 2. More useful, suitable, or desirable than another or others. 3. More highly skilled or adept than another or others. 4. Greater or larger: *the better part of an hour*. 5. More advantageous or favorable than others; improved. 6. Healthier or more fit than before. —adv. Comp. of **well?**. 1. In a more excellent way. 2.a. To a greater extent or degree. b. To greater advantage; preferably: *better left undone*. 3. More: *better than a year*. —n.

1. One that is greater in excellence or higher in quality than another or others. 2. A superior, as in standing, competence, or intelligence. —v. -tered, -ter-ing, -ters. —tr. 1. To make better; improve. See Syns at *improve*. 2. To surpass or exceed. —intr. To become better. —idioms. *for the better*. Resulting in or aiming at an improvement; had better. *Usage Problem*. Ought to; must, think better of. To change one's mind about (a course of action) after reconsideration. [ME < OE *betera*. See *bhad**.]

Usage Note: The phrase *had better* is acceptable, as long

as the *had* or its contraction is preserved: *You had better do it* or *You'd better do it*, but not *You better do it*. See *Usage Notes at best*, rather.

bet-ter² (bēt'ər) n. Var. of **bettor**.

better half n. Informal. One's spouse. [*< my better half*, the larger part of me, that is, a close friend.]

bet-ter-ment (bēt'ər-mənt) n. 1. An improvement over what has been the case. 2. *Law*. An improvement beyond normal upkeep that adds to the value of real property.

bet-ter-off (bēt'ər-ōf', -ōf') adj. Being in a better or more prosperous condition.

bet-tor also **bet-ter** (bēt'ər) n. One that bets or places a bet.

be-tween (bē-twēn') prep. 1.a. In or through the position or interval separating. b. Intermediate to, as in quantity, amount, or degree: *between 15 and 20 dollars*. 2. Connecting spatially.

3. Associating or uniting in a reciprocal action or relationship. 4.a. By the combined effort or effect of. b. In the combined ownership of: *a few dollars between them*. 5. As measured against. Often used to express a reciprocal relationship: *choose between riding and walking*. —adv. In an intermediate space, position, or time; in the interim. —idioms. *between you and me*. In the strictest confidence. *in between*. In an intervening period; in the meantime. [ME *bitwene* < OE *be-tweonum*. See *dwo**.] — *between* ness n.

Usage Note: According to a widely repeated tradition, “between” is used for two and “among” for more than two.” It is true that *between* is the only choice when exactly two entities are specified: *the choice between good and evil*. When more than two entities are involved, however, or when the number of entities is unspecified, *between* is used when the entities are considered as distinct individuals; *among*, when they are considered as a mass or collectivity. Thus in the sentence *The bomb landed between the houses*, the houses are seen as points that define the boundaries of the area of impact. In *The bomb landed among the houses*, the area of impact is considered to be the general location of the houses taken together. *Among* is most appropriate to indicate inclusion in a group: *She is among the best of our young sculptors*. *Between* is preferred when the entities are seen as determining the limits or endpoints of a range: *The plane went down somewhere between Quito, Lima, and La Paz*.

be-tween-brain (bē-twēn'bārn') n. See *diencephalon*.

be-tween-times (bē-twēn'timz') adv. At or during pauses.

be-twixt (bē-twiks') adv. & prep. Between. —idiom. *be-twixt and between*. In an intermediate position. [ME *bitwix* < OE *betwix*. See *dwo**.]

Beu-lah (bēyōō'lə) n. 1. *Bible*. The land of Israel. 2. The land of peace described in John Bunyan's *Pilgrim's Progress*.

beurre blanc (bür' blāngk', bēr blān') n. A sauce made with butter, shallots, and vinegar or lemon juice, often served with seafood. [Fr.: *beurre*, butter + *blanc*, white, not browned.]

Beuys (boiz, bois), Joseph. 1921–86. German artist who helped organize the German Green Party.

Bev-an (bēv'an), Aneurin. 1897–1960. Welsh-born British politician who as minister of health (1945–51) was the chief architect of the National Health Service.

bev-el (bēv'əl) n. 1. The angle or inclination of a line or surface that meets another at any angle but 90°. 2. Two rules joined together as adjustable arms used to measure or draw angles of any size or to fix a surface at an angle. —v. -eled, -el-ing, -els or -elled, -el-ing, -els. —tr. To cut at an angle that forms an angle other than a right angle. —intr.

To be inclined; slant. [Poss. < OFr. **bevel*, perh. < *bauf*, open-mouthed < *baer*, to gape < VLAT. **badāre*.]

bevel gear n. Either of a pair of gears with teeth surfaces cut so that they can connect unparallel gear shafts.

bevel square n. See *bevel* 2.

bev'er-age (bēv'ər-ij, bēv'rij) n. Any one of various liquids for drinking, usu. excluding water. [ME < OFr. *beverage* < *beuire*, to drink < Lat. *bebere*. See *pōl*(i)*.]

Bever-eridge (bēv'ər-ij, bēv'rij) n. Albert Jeremiah. 1862–1927. Amer. politician and historian whose works include *The Life of John Marshall* (1916–19).

Bever-er-ly (bēv'ər-lē) n. A city of NE MA NE of Boston; settled in 1626. Pop. 38,195.

Beverly Hills. A city of S CA surrounded by Los Angeles. Pop. 31,971.

Bev'in (bēv'in), Ernest. 1884–1951. British labor leader and politician who helped draft the NATO treaty of 1949.

bev'e-ry (bēv'ər-ē) n., pl. -ies. 1. A group of animals or birds, esp. larks or quail. 2. A group or an assemblage. [ME < AN. *beveie*.]

be-wall (bē-wāl') tr.v. -walled, -wall-ing, -walls. 1. To cover; lament: *be-wail the dead*. 2. To express sorrow or unhappiness over. —v. -wall'er n. — **be-wail'ment** n.

be-ware (bē-wār') v. -wared, -war-ing, -wares. —tr. To be on guard against; be cautious of. —intr. To be cautious; exert caution: *Beware of the dog*. [ME *ben war*: *ben*, to be; *see* + *war*, on one's guard; see *WARE* 2.]

be-whis-kered (bē-hwīs'kərd, -wīs'-) adj. Having whiskers.

be-wigged (bē-wīgd') adj. Wearing a wig.

be-wil·der (bē-wil'dər) tr.v. confuse or befuddle, esp. v. tions, objects, or statements ings; disorient. — **be-wil'dness** n. — **be-wil'der-ing** v. tions; disorienting.

be-wil·der·ment (bē-wil'dər-mənt) v. tions; disorienting confused. 2. A situation

be-witch (bē-wich') tr.v. -w.

1. To place under one's po

2. To captivate completely

— **be-witch'er** n. — **be-wit**

— **be-witch'ing** (bē-wich'ing) a spell; fascinating. — **be-wit**

— **be-witch'ment** (bē-wich'ma-

2. The power to bewitch. — **be-witching** spell.

be-wray (bē-rā') tr.v. -wrayed

disclose or betray. [ME *bi-bin* (< OE *wrēgan*).]

be-yā (bā) n. 1. A provincial g

2. A ruler of the former kin

as a title for various Turkis

2. Old Turkic *beg*, ruler, pi

— **be-yond** (bē-ōnd', bi-yōnd')

2. Later than; after. 3. To

standing, reach, or scope of

or amount greater than. 5.

along or away. 2. In addi

unknown or unexplored. 2.

bijonde < OE *begeondan*: i

far side of; set I-.

bez-ant (bēz'ənt, bā-zānt')

flat disk used as an ornam

Lat. *Zaūtius* < Lat. of E

bez-el (bēz'əl) n. 1. A slant

a cutting tool. 2. The upp

3. A groove or flange desig

a watch crystal or a gem. [

< bis, two times < Lat. Se

Bé-ziers (bāz'yā'). A city of

76,647.

be-zique (bā-zēk') n. Games

that is played with a deck

Ital. *bazzica*, a kind of car

be-zoar (bē'zōr', -zōr') n. —

animal found in the stomachs

of animals, once considered

stone poison antidote, pro

testinal mass used as poiso

pāzahr pād-, protector (<

poison < MPers.; see *gwt*

Bez-wa-da (bēz-wā'dā). Se

bf abbr. also b.f. or bf. 1. B

or B.F. abbr. Accounting

B.F.A. abbr. Bachelor of Fin

BG or B.G. abbr. Brigadier g

bg. abbr. 1. Background. 2.

BGH abbr. Bovine growth h

B-girl (bē'gūrl') n. A woma

customers to spend money

Bh The symbol for the elem

BH abbr. Bill of health.

BHA (bē'āch-āt') n. A wh

$C_{11}H_{16}O_2$, used to preserv

TYLATED (HYDROXYL) (ASINOLE).

Bha-ga·va·d-Gī-tā (bā-gā-

Hindu text in which Krish

bhagavat-gītā, song of

bles bhagavat, fortunate, ble

bhag*) + gītā, song (< ī

bhak·ti (bēk'tē) n. Hinduis

ting salvation, emphasizing

all. [Sk. *bhaktih*, devoti

bhagah, good fortune, sha

bhang, also bang (bāng) n.

seed capsules of the cann

obtain mild euphoria. [Ult

Bhat·pa·ra (bāt-pā'ra). A

N of Calcutta. Pop. 260,7

Bhay-na·gar (bou-nūg' or,

Gulf of Cambay S of Ahn

BHC abbr. Benzene hexachl

bhd. abbr. Bulkhead.

— **bl-ax-i-al** adj.

bl-ax-i-al-i-ty n.

bl-ax-i-al-ly adv.

bl-ax-i-lar adj.

bl-cen-tric adj.

bl-cre-tic-i-ty n.

bl-col or adj.

bl-ax-i-al adj.

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